

Reproducibility of laboratory experiment for verification of cloud condensation nucleation by cosmic rays

Asami Suzuki^{1*}, Kimiaki Masuda¹, Yoshitaka Itow¹, Takashi Sako¹, Yutaka Mathumi¹, Tomoki Nakayama¹, Kanya Kusano¹

¹Solar-Terrestrial Environment Laboratory, Nagoya University

It is said that there is the correlation between the solar activity and earth climate.

However, a mechanism of the correlation is still not understood.

One of hypotheses for the mechanism is that an amount of cloud changes in connection with the cosmic-ray intensity which is influenced by the solar activity as indicated by the observation of good correlation between cosmic-ray intensity and the amount of low clouds.

The ion-induced nucleation model is considered as a model to explain this mechanism.

New particle is created efficiently in the atmosphere, with atmospheric ions produced by cosmic rays and finally this particle grows to the size of cloud condensation nucleus .

In order to verify the hypothesis the gas with the atmospheric composition is irradiated with ionizing radiation.

In this study, a verification experiment is conducted in a laboratory with a reaction chamber, flow control of clean air, H₂O, O₃ and SO₂, and irradiation of UV light and beta-rays as an ion source.

We will show a relation between aerosol concentration and ion density , and it is reproducibility.

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